CLAIMS:(ORIGINAL TRANSLATION)

[1]   A map depiction apparatus which carries out a depiction process of producing map image data corresponding to a map to be displayed on a display unit comprising:

a first recording means for recording a map file, being a data file which is provided with respect to each of areas obtained by dividing an entire area, subjected to display on the map having at least :

(a) map data used in producing the map image data of each of the areas and made up of structural data for depicting a map in the area; and

(b) administration data indicative of whether or not the structural data corresponding to the region exists with respect to regions obtained by dividing each of the areas;

a second recording means which records an administration file having region specifying information for specifying each of the regions described in it, the region specifying information being in correspondence with specific data indicative of the map file where the corresponding region belongs;

a specifying means for specifying a map file which includes a region corresponding at least to the region specifying information when the region specifying information is acquired;

a judging means for judging whether or not the structural data exist in correspondence with the region specified by the region specifying information on the basis of the administration data, which are contained in the map file thus specified; and

a display control means which produces, when it is judged that the structural data corresponding to the region exist, the map image data corresponding to the region on the basis of the structural data and outputs the map image data to the display means.

[2]   The map depiction apparatus according to Claim 1, wherein

the map data are made up of partial data including structural data for region by region depicting a map corresponding to the region, and

the display control means produces the map image data for displaying the map of the region on the basis of the structural data contained in the partial data corresponding to the region when it is judged by the judging means such that the structural data corresponding to the region exist.

[3]   The map depiction apparatus according to Claim 1, wherein

the region specifying information includes at least information for specifying a point on the map,

the administration file has both of specifying data for specifying the region where the point corresponding to the region specifying information belongs and specifying data for specifying the map file where the point belongs, on the basis of the region specifying information,

the specifying means specifies the map file where the region belongs and the region corresponding to the region specifying information on the basis of the administration file when the region specifying information is inputted.

[4]   The map depiction apparatus according to Claim 1, wherein

the administration file includes map data corresponding to a map of a reduction scale larger than the map data contained in the map file, and
the display control means produces the map image data on the basis of the map data contained in the administration file when map image data for displaying a map corresponding to a reduction scale larger than that of the map data included in the map file.

[5]   The map depiction apparatus according to Claim 1, wherein

the map file includes map data corresponding to maps of two reduction scales or more and the administration data corresponding to the regions of each of the reduction scales,

the administration file has the region specifying information and the

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specifying data, with respect to each of the reduction scales, such that the region specifying information and the specifying data correspond each other,

the specifying means specifies, when the region specifying information is inputted, on the basis of the administration file, the reduction scale and the map file where the region corresponding to the region specifying information belongs, and

the judging means judges whether or not the structural data corresponding to the region on the map of thus specified reduction scale on the basis of the administration data of the map file thus specified.

[6]   The map depiction apparatus according to Claim 1, further comprising:

a network data recording means which records network data for designating an existing position of roads which are displayed on the map; and

a position specifying means for specifying a present position of a movable body on the map on the basis of the network data, wherein

the display control means produces the map image data on the basis of the structural data and outputs the map image data to the display means so that movable body positional information indicative of existence of the movable body at the position, which is specified by the position specifying means on the map, is displayed along with the map of the region.

[7]   The map depiction apparatus according to Claim 6, further comprising:

a route setup means for setting up a route from the position of the movable body specified by the position specifying mean on the map to a destination to be set up, on the basis of the network data.

[8]   A navigation apparatus having a map depiction apparatus which carries out a depiction process of producing map image data corresponding to a map to be displayed on a display unit comprising:

a first recording means for recording a map file, being a data file which is provided with respect to each of areas obtained by dividing an entire area,

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subjected to display on the map having at least :

(a) map data used in producing the map image data of each of the areas and made up of structural data for depicting a map in the area; and

(b) administration data indicative of whether or not the structural data corresponding to the region exists with respect to regions obtained by dividing each of the areas;

a second recording means which records an administration file having region specifying information for specifying each of the regions described in it, the region specifying information being in correspondence with specific data indicative of the map file where the corresponding region belongs;

a specifying means for specifying a map file which includes a region corresponding at least to the region specifying information when the region specifying information is acquired;

a judging means for judging whether or not the structural data exist in correspondence with the region specified by the region specifying information on the basis of the administration data, which are contained in the map file thus specified; and

a display control means which produces, when it is judged that the structural data corresponding to the region exist, the map image data corresponding to the region on the basis of the structural data and outputs the map image data to the display means.

[9]   A map depiction method carried out in a map depiction apparatus having,

(a) a map file, being a data file which is provided with respect to each of areas obtained by dividing an entire area, subjected to display on the map having at least :

map data used in producing the map image data of each of the areas and made up of structural data for depicting a map in the area; and

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administration data indicative of whether or not the structural data corresponding to the region exists with respect to regions obtained by dividing each of the areas, and

(b) an administration file which has region specifying information for specifying each of the regions in a manner that the region specifying information is in correspondence with the specified data indicative of each of the map file where the corresponding region belongs, recorded in it, comprising:

a first step of specifying a map file where a region corresponding to the region specifying information at least belongs on the basis of the administration file when the map depiction apparatus acquires the region specifying information;

a second step carried out by the map depiction apparatus of judging whether or not the structural data corresponding to the region specified by the region specifying information exist on the basis of the administration data contained in the map file thus specified; and

a third step by the map depiction apparatus of producing, when it is judged that the structural data exist, the map image data corresponding to the region on the basis of the structural data and outputting the map image data to a display means.

[10] A map depiction program for reading out map data out of a recording medium and displaying a map on a display apparatus, the recording medium having a map file, being a data file which is provided with respect to each of areas obtained by dividing an entire area, subjected to display on the map having at least

map data used in producing the map image data of each of the areas and made up of structural data for depicting a map in the area; and

administration data indicative of whether or not the structural data corresponding to the region exists with respect to regions obtained by dividing

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each of the areas, and

(b) an administration file which has region specifying information for specifying each of the regions in a manner that the region specifying information is in correspondence with the specified data indicative of each of the map file where the corresponding region belongs, recorded in it, the map depiction program for causing a computer to perform:

a specifying means for specifying a map file where a region corresponding at least to the region specifying information belongs on the basis of the administration map when the region specifying information is acquired;

a judging means for judging whether or not the structural data exist in correspondence with the region specified by the region specifying information on the basis of the administration data, which are contained in the map file thus specified; and

a display control means which produces, when it is judged that the structural data corresponding to the region exist, the map image data corresponding to the region on the basis of the structural data and outputs the map image data to the display means.

[11] An information recording medium which has the map depiction program according to Claim 10 recorded onto it, so as to be read out by the computer.